

difficult to obtain; because the monkeys live here, which are under the special protection of the English, who have set a great fine upon any one who should take or kill one of these animals. *Scilla hemisphærica* occurs also on boulders, but less beautiful and rarer than on the original walls. On shady boulders and in rocky clefts, as well as along the narrow comb of the summit, *Cerastium gibraltarium*, Boiss., is very frequent. Also, on the rocky walls of the eastern acclivity, grow *Reseda alba*, L., *Antirrhinum majus*, L., and especially on the north-eastern rocks, *Saxifraga globulifera*, Desf., β . *gibraltaria*, Boiss., which is only now beginning to shoot forth its buds. Upon boulders blossom *Veronica cimbrolaria*, Badara, very rare *Senecio minutus*, DC., in fine large specimens, *Erodium moschatum*, L., and under bushes *Ætheorrhiza bulbosa*, Cass., and *Smilax mauritanica*, Desf. The rock-walls of the eastern acclivity descend toward the Punta de Europa straight down into the sea, whilst those of the northern valley descend to only half the height of the mountain, and here join on to a steep slope consisting of boulders and drift-sand, which extends down to the shore. On these slopes grow *Ononis gibraltaria*, Boiss., in great profusion, which unfortunately was not yet in blossom, besides *Silene gibraltaria*, Boiss., in the same state, and several other species of this genus: also in the drift-sand *Erodium laciniata*, Cav., *Uropetalum serotinum*, Ker., a small form of *Picridium tingitanum*, Desf., *Linaria pedunculata*, Spr., and the pretty *L. amethystea*, Lk. Hoffm., var. *albiflora*, Boiss., with white flowers, yellow palate, and violet-spotted lower lip.

On the isthmus of Gibraltar, a naked sandy plain full of numerous salt lakes, which separates the limestone rocks of Gibraltar from the sandstone hills of S. Roque, are found few plants, but some rare species. On the downs grows *Schænus mucronatus*, L., in great abundance, more rare a *Carduus*, and among bushes of *Tamarix gallica* several *Silenes*, *Erodium Botrys*, Bertol., *Astocarpus sesamoides*, DC., and *Passerina villosa* (?), Wikstr., occur frequently. In addition is found the pretty *Ononis variegata*, Desf., in the drift-sand of the isthmus, in pretty considerable abundance.

BIBLIOGRAPHICAL NOTICES.

Recherches sur l'Anatomie, la Physiologie et l'Embryogénie des Bryozoaires; par M. Van Beneden, Professeur à l'Université Catholique de Louvain. (Extrait du tom. xviii. des Mémoires de l'Académie Royale de Bruxelles.)

IN these "Recherches," Van Beneden continues the admirable series of Mémoires in which he proposes to illustrate the structure of the invertebrate animals found on the coast of Belgium. The first memoir in the present brochure is devoted to the genus LAGUNCULA, as Van Beneden calls the *Lagenella* of Farre, forgetting that Ehrenberg had long ago given the name *Farrella* to this zoophyte. And we would here remark that, while he carelessly sets aside the rules of scientific nomenclature, Van Beneden has a happy tact in confer-

ring upon his genera the most unhappy names. *Laguncula*, it appears, is to be considered the *euphonious* diminutive of *Lagena*!—his *Hydractinia* has little relationship either to *Hydra* or *Actinia*, and is most certainly not the link of connexion between them:—and lo! we have now a *Sompopcellaria*,—certainly the ugliest of this ugly family.

The anatomy of the *Laguncula* is well-described and beautifully illustrated, but does not present much novelty to those who are familiar with the labours of Dr. Farre. We shall cull what strikes us as most peculiar to the author.

The inner surface of the stomach is furnished with a semilunar series of cilia, by whose vibrations the food is kept in a continual rotatory motion. There is no appearance of a liver.

The tentacula are the principal organs of respiration: they vary in number—10, 11 or 12, and this variation is not the result of mutilation. The circle they form is less regular than that of other marine Bryozoa, for they are disposed in a symmetrical order, and give indication of the beginning of a binary disposition. *Laguncula* may therefore be considered as a link between its marine congeners and the freshwater *Hippocrepia* of Gervais.

The purpose of a circulation is effected, but without the agency of special organs. A colourless transparent fluid, loaded with irregular globules of comparatively large size, fills the space between the intestinal canal and the skin, and lies in immediate contact with all the organs of the polype. It thus occupies a position like to that of the blood in the superior animals; and although the liquid seems to be water merely, it distributes to each part of the body its nutritive element, and hence also fulfils the same function as the blood does. We cannot perceive any aperture for the admission of the circumfluent water into the peri-intestinal cavity, but Van Beneden is assured of its existence, for he had seen an egg issue forth through the walls of the cell when no pressure was used to force it out. And yet, when these polypes were immersed for a night in water coloured with carmine, the peri-intestinal fluid remained untinged. Lastly, this fluid has the same office in the system as the prostatic secretion (le liquide du sperme), for both spermatozoa and ova swim freely in it. [There is here surely a painful search after analogies, which, after all, appear to us to be of the very loosest kind.]

M. Du Mortier first discovered a nervous system in polypes. Van Beneden has seen it in this genus. A transparent, somewhat yellowish ganglion on the top of the œsophagus, and as it were soldered to its parietes, may be seen in some specimens and in certain favourable aspects; but Van Beneden could not detect any collar or nerves branching from the ganglion, while at the same time he considers their reality to be indisputable. The ganglion is assumed to be nervous from the sameness of its position to the brain of the *Ascidia*.

We pass over the excellent description given of the muscular system, of the skin and cell, to notice some particulars of the reproductive organs. The polypes are hermaphrodites, there being a

male and female organ in all adult individuals. The products of both organs—spermatozoa and eggs—on their becoming detached, are intermingled in the peri-intestinal cavity, where probably the latter are impregnated. The testicle is situated at the extremity of the stomach, in the place where we observe the ovary in other genera: it appears when the polype approaches to maturity, is unequally pitted, and has very much the aspect of the ovary of birds when they are not in season.

The female organ or ovary is formed on the inner surface of the fold of skin that lines the cell, and on one side near the mouth of the sac. It is at first a mere tubercle, similar to an abnormal excrescence, but it grows rapidly, and ova, in different stages of development, are soon visible in it. In the young ova the vesicles of Wagner and of Purkinje are distinctly seen. In those more mature they have disappeared, and we then discover an external vitelline membrane or chorion, and a vitellus underneath. The ovum at maturity tears its envelope and falls into the peri-intestinal cavity. From this it escapes into the sea by a distinct opening which is formed at the base of the tentacula. On its exclusion the surface does not appear to be covered with vibratile cilia; and Van Beneden was unsuccessful in tracing its further evolution.

The increase of the polypidom from the development of buds is next described. Van Beneden first remarks, that although this polype is an animal of considerable complexity in its organization, yet we here observe that it can be formed without the vesicle of Wagner or of Purkinje, whence it is evident that these vesicles are not indispensable to the formation of an animal, and they are to be looked upon only as a means of isolation for the future individual. Next the author inquires if all the textures of these inferior entities proceed from cellules, agreeably to the doctrine of Schwann, and he answers in the affirmative, although it is admitted that there are differences between the cellules in them and in those of the superior animals. After this, Van Beneden proceeds to trace the growth of the bud, and the successive evolution of the organs of the polype, which is done in a very clear and masterly manner.

The characters of the genus and of its species are next given. The *L. repens* is exceedingly abundant and common at Ostend. The *Laguncula elongata*, a new species, is of less frequent occurrence: it is distinguished by having an elongated pedicle which in general exceeds the length of the cell, and the polype has 16 tentacula.

We reserve the second memoir for a separate notice, for we should not like to review in a more cursory manner our author's much-prized labours. There are none on which we set a higher value. In the meantime we have only to remark, that, in some preliminary observations, Van Beneden expresses his opinion that the Linnæan division of the animal kingdom will be found, after all, superior to that of Cuvier or of Blainville, and more in harmony with the development of structure. In the first four classes the vitellus is absorbed by the belly: these are the vertebrated animals that may be more appropriately called the *Hypovitelliens*, or still better the *Hypocoty-*

ledones, for there are several fishes which have no vertebræ. The Insecta of Linnæus, or the articulated animals of authors, are distinguished by the absorption of the vitellus occurring by the back; and as all of them are not articulated, it would be better to name them the *Epivitelliens* or *Epicotyledones*. In the Worms (*Vermes*) of Linnæus, of which Cuvier has made his Mollusca and Radiata, the vitellus returns inwards neither by the back nor by the belly; and we may distinguish them by the names of *Allovitelliens* or *Allocotyledones*. The Mollusca certainly do not differ so much from the Radiata, as the Vertebrata do from the Articulata. Time, as the author says, must test this arrangement, which must be admitted to be very ingenious.

PROCEEDINGS OF LEARNED SOCIETIES.

BOTANICAL SOCIETY OF EDINBURGH.

Dec. 11, 1845.—Dr. A. Inglis in the Chair.

Mr. J. M'Nab read a continuation of his Journal of a Tour through part of the United States and the Canadas.

In the present portion, embracing the journey from Niagara to New London, Mr. M'Nab particularly alluded to the excellent state of the cultivated grounds through the Hamilton and Gore districts, and the suitableness of large tracts of the wooded country for emigrants. On some waste land round the head of Burlington Bay, many good specimens of herbaceous plants were observed in flower; of these the *Lespedeza hirta*, *Polygala verticillata*, *Gerardia tenuifolia*, and *G. pedicularia*, were abundant, with *Chrysopsis alba*; the latter plant being noticed for the first time as an inhabitant of Canada. Two grasses with strong herbage, *Andropogon furcatus* and *Limnetus cynosuroides*, abound in the neighbourhood of Hamilton, but neither seemed to be relished by cattle. The moorland ground in the vicinity of Brantford afforded many interesting botanical rarities, among which *Euphorbia corollata* was conspicuous. *Liatris stricta*, *Aletris farinosa*, *Lespedeza frutescens*, *Batschia Gmelini*, *Arenaria stricta*, *Viola palmata*, with many others, were plentiful in flower, and proved most attractive objects on the dry sandy plains; while the moister places yielded *Tofieldia glutinosa*, *Zigadinus chloranthus*, and *Glycine apios* in profusion. The forests of the inland districts were exceedingly rich and varied, many of them containing large and lofty trees of oak, elm, beech, hickory, ash, and white pine. Some of these districts, in process of clearing, presented a very remarkable appearance in consequence of large groups of stately trees standing dead, many with stems from 10 to 14 feet in circumference and varying from 80 to 100 feet in height. The mode resorted to by the settlers for killing the trees is by cutting, during the early part of winter, a notch five or six inches deep round the lower part of their stems. The white pines presented a very singular appearance, caused by a peculiar seeming twisting of the decayed trunks in